IN THE CLAIMS

Please amend the claims as follows.

1.   (Currently Amended) A method of accessing a multi-dimensional index structure resident in main memory for facilitating reference to data objects stored in a database, wherein the index structure consists of internal nodes having pointers to child nodes and leaf nodes having to database objects, the method comprising:

associating with each node a minimum bounding rectangle ("MBR"), wherein each MBR is a minimal hyper-rectangle enclosing a corresponding data object in the case of a leaf node and all hyper-rectangles in the child node in the case of an internal node;

representing each of one or more said MBRs by a relative representation of an MBR ("RMBR"), wherein the relative representation of an MBR ("RMBR") that is coordinates of the MBR represented relative to coordinates of a reference MBR; and

compressing each RMBR[[s]] into a quantized[[,]] RMBR ("QRMBR") by quantizing each RMBR to using a given finite precision level of quantization, wherein the compressing includes by cutting off trailing insignificant bits of the RMBR after quantization[[.]]; and

accessing the data objects stored in the database as a function of the QRMBR.

2.   (Original) The method of claim 1, wherein said multi-dimensional index structure is an R-tree.

3.   (Original) The method of claim 1, wherein said multi-dimensional index structure is an R*-tree.

4.   (Original) The method of claim 1, wherein said multi-dimensional index structure is an R+-tree.

5.   (Original) The method of claim 1, wherein said multi-dimensional index structure is a Hilbert R-tree.

6.   (Previously Presented) The method of claim 1, wherein each internal node has a plurality

of entries and wherein a first entry has a QRMBR and a pointer while the rest of the entries have

only QRMBRs.

7.   (Original) The method of claim 1, wherein each node stores a reference MBR.

8.   (Currently Amended) The method of claim 7, wherein the reference MBR of a node is

obtained from ~~the~~ a corresponding QRMBR stored in the node's parent node.

9.   (Original) The method of claim 1, wherein the internal nodes store QRMBRs while the

leaf nodes store MBRs.

10.   (Original) The method of claim 1, wherein said database resides in main memory.

11.   (Original) The method of claim 1, wherein said database resides in disk.

12.   (Currently Amended) A method of accessing a multi-dimensional index structure

resident in main memory for facilitating reference to data objects stored in a database, wherein

the index structure consists of internal nodes having pointers to child nodes and leaf nodes

having to database objects, the method comprising:

        associating with each node a minimum bounding shape, a multi-dimensional shape

enclosing a corresponding data object in the case of a leaf node and all minimum bounding

shapes in the child node in the case of an internal node;

        representing each of one or more said minimum bounding shapes by a relative

representation, wherein the relative representation ~~that~~ is coordinates of [[a]] the minimum

bounding shape represented relative to coordinates of a reference minimum bounding shape; ~~and~~

        compressing each relative representation into a quantized representation by quantizing

each relative representation ~~to~~ using a given finite ~~precision~~ level of quantization, wherein the

compressing includes ~~by~~ cutting off trailing insignificant bits <u>of the relative representation</u> after

quantization[[.]]; and

  <u>accessing the data objects stored in the database as a function of the quantized</u>

<u>representation to access.</u>

13. (Previously Presented) The method of claim 12, wherein each internal node has a

plurality of entries and wherein a first entry has a quantized representation and a pointer while

the rest of the entries have only quantized representations.

14. (Previously Presented) The method of claim 12, wherein the reference minimum

bounding shape of a node is obtained from a corresponding quantized representation stored in the

node's parent node.

15. (Original) The method of claim 12, wherein said database resides in main memory.

16. (Original) The method of claim 12, wherein said database resides in disk.

17. (Withdrawn) A multidimensional index structure for facilitating referencing data objects

stored in a database, comprising: a plurality of nodes for forming a tree comprising internal

nodes having pointers to child nodes, and leaf nodes having pointers to data objects; minimum

bounding rectangles ("MBRs"), wherein each MBR is the minimal hyper-rectangle enclosing the

corresponding data object in the case of a leaf node and all the hyper-rectangles in the child node

in the case of an internal node; and a quantized, reference MBR ("QRMBR") relative to which a

relative representation of an MBR is calculated with respect to a reference MBR and quantized

to finite precision.

18. (Withdrawn) The index structure of claim 17, wherein said tree is an R-tree.

19. (Withdrawn) The index structure of claim 17, wherein said tree is an R*-tree.

20.   (Withdrawn) The index structure of claim 17, wherein said tree is an R+-tree.

21.   (Withdrawn) The index structure of claim 17, wherein said tree is a Hilbert R-tree.

22.   (Withdrawn) The index structure of claim 17, wherein each internal node has a plurality of entries where the first entry has a QRMBR and a pointer while the rest of the entries have only QRMBRs.

23.   (Withdrawn) The index structure of claim 17, wherein each node stores a reference MBR.

24.   (Withdrawn) The index structure of claim 17, wherein said reference MBR of a node is obtained from the reference MBR in the node's parent node.

25.   (Withdrawn) The index structure of claim 17, wherein said reference MBR is stored only in the root node.

26.   (Withdrawn) The index structure of claim 17, wherein the internal nodes store QRMBRs while the leaf nodes store MBRs.

27.   (Withdrawn) The index structure of claim 17, wherein said database resides in main memory.

28.   (Withdrawn) The index structure of claim of claim 17, wherein said database resides in disk.

29.   (Withdrawn) An index tree for facilitating referencing to data objects stored in a database, comprising: a plurality of nodes comprising internal nodes having pointers to child nodes, and leaf nodes having pointers to data objects; minimum bounding shape, a minimal, multi-dimensional shape enclosing the corresponding data object in the case of a leaf node and

all the bounding shapes in the child node in the case of an internal node; and a quantized, relative representation of the minimum bounding shape, calculated relative to a reference bounding shape, and quantized to finite precision by cutting off insignificant trailing bits.

30.   (Withdrawn) The index tree of claim 29, wherein said plurality of nodes form an R-tree.

31.   (Withdrawn) The index tree of claim 29, wherein said database resides in main memory.

32.   (Withdrawn) The index tree of claim 29, wherein said database resides in disk.